Week 3 quiz

1. Which of the following is NOT true of hyaline cartilage?
   1. It is the most prevalent cartilage type
   2. The chondrocyte is the primary fixed cell type
   3. The fixed cell chondroblast does not divide
   4. It is surrounded by an avascular matrix
   5. Both A and C
2. Which of the following is NOT true of the perichondrium?
   1. It is made of 2 layers, the fibrous layer and the osteogenic layer
   2. Its fibrous layer contains blood vessels
   3. The second layer is made up of cells of the fibrous layer that differentiate into chondroblasts
   4. The chrondrogenic layer is responsible for appositional growth
3. The ground substance between cartilaginous cells:
   1. Is rich in fluid (water)
   2. Is made up of a slightly blue matrix due to its avascular nature
   3. Contains lots of sulfated GAGs
   4. Has a interterritorial matrix that immediately surrounds cells
4. Which of the following is a type of glycoprotein found in cartilage ground substance?
   1. Hyaluronic acid
   2. Keratin sulfate
   3. Osteonectin
   4. Chondrocalcin
5. Where do you find hyaline cartilage in the body?
   1. Fetal skeleton
   2. Esophagus
   3. Trachea
   4. Bronchi of lungs
   5. All of the above
   6. A, C, and D
6. Which is true of elastic cartilage?
   1. It is made up of elastic fibers and collagen type II
   2. Chrondrocytes secrete both fibers in answer a
   3. Is found in places where resilient support is needed
   4. All of the above
   5. None of the above
7. Which of the following is NOT true?
   1. Gomphoses are immovable joins that are fibrous in structure
   2. Costal cartilage is classified as a synchondroses cartilaginous joint
   3. Sutures in adults are considered diarthroses
   4. Synovial joints have 5 major characteristics, two of which are a synovial cavity that contains synovial fluid
8. Which of the following is true of joint cartilage repair?
   1. Injured cartilage is easy to repair because cells undergo mitosis to form new cartilage
   2. Chrondroprogenitor cells from bone marrow is responsible for repair
   3. Repaired tissue is made of hyaline cartilage
   4. Repaired tissue is just as strong as the original cartilage
9. Mutarotation:
   1. Is the interconverison of alpha and beta isomers
   2. Occurs via the open chain form
   3. Takes place at the anomeric carbon
   4. Both A and C
   5. All of the above
10. Which of the following matching pairs is NOT true?
    1. Osteocyte-cytoplasmic processes that run through canaliculi
    2. Osteoblast-lays down new bone matrix on an existing surface
    3. Osteoclast-located in howships lacunae
    4. Osteoprogenitor cell-eventually differentiate into osteoblasts
    5. Bone lining cell-eventually differentiate into osteocytes
11. The organic extracellular matrix:
    1. Consists of collagen type 1 that gives bone strength and flexibility
    2. Contains ground substance that has a lot of water
    3. Contains osteonectin that binds Calcium to the matrix
    4. Contains bone sialoprotein that binds plasma membrane to collagen fibers
12. Which of the following is NOT a characteristic in the cellular nucleation theory of mineralization?
    1. Matrix vesicles contain alkaline phosphatase
    2. Alkaline phosphatase inhibits pyrophosphatate
    3. Citrates and nucleotides encourage calcification of a tissue
    4. Alkaline phosphatase raises Ca2+ and PO- levels
13. Trabecular bone:
    1. Is also called spongy bone
    2. Is made up of trabecula fingers
    3. Trabecula are made up of trabecular packets, which are made of lamellar bone
    4. All of the above
14. The purpose of the Volkmann canals is:
    1. To provide transverse support in the bone
    2. To bring nutrients via the blood to osteons
    3. Carry nerves into the bone
    4. Connect the periosteum to the bone matrix
15. All bone growth is appositional.
    1. True
    2. False
16. Which of the following is not a characteristic of bone remodeling?
    1. The resorption cone is formed by numerous osteoclasts
    2. Osteoblastic activity leads to an increase of Ca2+ in the blood
    3. Macrophages are present in the reversal zone
    4. Osteoprogenitor cells found in the blood vessel of the closing cone differentiate into osteoclasts
    5. Both A and B
    6. Both B and D
17. Parathyroid hormone:
    1. Increases blood Ca2+ level
    2. Stimulates osteoclasts
    3. Has receptors on osteoclasts
    4. All of the above
    5. Only A and B
18. During intramembranous ossification, bony islands:
    1. Are equidistance from blood vessels
    2. Increase in size via appositional growth
    3. Eventually come together and form trabecular bone
    4. All of the above
    5. Only A and B
19. During endochondral ossification in the embryo/fetus:
    1. Hyaline cartilage turns into bone
    2. The bony collar is made by intramembranous ossification
    3. The primary spongiosa is the first area where trabecular bone is formed
    4. Secondary bone formation is done by replacing hyaline cartilage with a calcified cartilage matrix
    5. All of the above
    6. Only A, B, and C
20. In the zone of proliferation:
    1. Chondroblasts do not divide
    2. Is recognized by columns of flattened cells
    3. The cartilage shows appositional growth
    4. All of the above
    5. Only A and B
21. Which of the following is FALSE regarding the zone of ossification?
    1. Blood vessels invade the cartilage matrix
    2. Osteoprogenitor cells differentiate into osteoblasts, which lay down osteoid
    3. Once the osteoid is mineralized, it forms lamellar bone
    4. Trabeculae that are formed turn into spongy bone, indicating the zone of secondary ossification
    5. Both B and C
    6. Both C and D
22. In acromegaly:
    1. Is a disease caused by too much vitamin A
    2. Is worsened by and increase in androgens
    3. Shows thickening of bones due to an excess of GH in a child
    4. Shows a thickening of bones due to an excess of GH in an adult
23. Which of the following is a regulatory enzyme in glycolysis?
    1. Phosphoglycerate Kinase
    2. Aldolase
    3. Pyruvate Kinase
    4. Phosphoglycerate Mutase
24. Antabuse is a drug given to treat alcoholics. Its action inhibits the enzyme\_\_\_\_\_\_, leading to a buildup of the toxic substance\_\_\_\_\_\_\_\_\_.
    1. Acetaldehyde dehydrogenase, acetic acid
    2. Acetaldehyde dehydrogenase, acetaldehyde
    3. Alcohol dehydrogenase, fatty acids
    4. Alcohol dehydrogenase, acetaldehyde
25. The epimysium:
    1. Surrounds individual fascicles (muscle fibers)
    2. Surrounds individual fibers (individual muscle cell)
    3. Surrounds individual muscles (many fascicles)
    4. Is made of type 1 collagen
    5. Both B and D
    6. Both C and D
26. Which of the following is NOT a characteristic of white (type II B) muscle fibers?
    1. They are the largest of the muscle fiber types
    2. They are primary glycolytic
    3. They become rapidly fatigued
    4. They have many mitochondria
27. Which of the following are Z-line proteins?
    1. Cap-Z
    2. Troponin
    3. Alpha actinin
    4. All of the above
    5. Both A and C
28. The protein troponin:
    1. Is a cap protein for the (-) end of actin
    2. Regulates the availability of myosin binding sites
    3. Is involved in Ca2+ regulation of contraction
    4. Is anchored at the Z-line
29. Which of the following are true of T-tubules?
    1. They create deep invaginations in the sarcolemma
    2. They carry blood vessels deep into the muscle
    3. They are flanked by 1 terminal cisternae of the sarcoplasmic reticulum, collectively called a diad
    4. Help the binding of thick filaments to thin filaments
30. Which band/zone/line of the sarcomere does not change in size during muscle contraction?
    1. I-band
    2. H-zone
    3. A-band
    4. M-line
31. Concerning the first step of muscle contraction (nerve impulse and the myoneural junction), which of the following is false?
    1. Neurons from the ventral horn carry the signal for muscle contraction
    2. A single motor axon innervates a single muscle cell, termed a motor unit
    3. Ends of motor neurons contain many vesicles filled with acetylcholine
    4. Nicotinic receptors are found on the sarcolemmal membrane adjacent to the synaptic cleft
32. When intracellular Ca++ concentration increases:
    1. Ca++ binds to troponin-C,
    2. The troponin/tropomyosin complex is able to rotate, uncovering the myosin binding site
    3. DHPR and ryanodine receptors have been activated
    4. All of the above
33. How does Ca++ get removed and pumped back into the sarcoplasmic reticulum lumen?
    1. Ca++/ATPase
    2. Simple diffusion
    3. Ca++/Na+ transporter
    4. Symport with Na+
34. Which of the following is true regarding muscle?
    1. Myesthenia gravis is a disorder where antibodies destroy Acetylcholine receptors at the neuromuscular junction
    2. Intrafusal fibers with several nuclei at their midregion are called nuclear chain fibers
    3. Muscle spindles contract in a longitudinal fashion with muscle cells
    4. Muscular dystrophy is due to an X-linked recessive mutation of the gene coding for the protein vimentin
35. Which of the following is a function of the pentose phosphate pathway?
    1. Plays a key role in protecting red blood cells from oxidative damage
    2. To generate reducing power in the form of NADPH
    3. To convert hexoses into pentoses
    4. Participates in the formation of glucose from CO2 and H2O in the dark reactions of photosynthesis
    5. Only B, C, and D
    6. All of the above
36. Which of the following is a coenzyme for transketolase in the pentose phosphate pathway?
    1. Biotin
    2. Mg++
    3. TPP (thiamine pyrophosphate)
    4. Riboflavin
37. Which enzyme in the pentose phosphate pathway generates the second NADPH?
    1. Phosphopentose isomerase
    2. 6-phosphogluconate dehydrogenase
    3. lactonase
    4. glucose 6-phosphate dehydrogenase

Answers on the next page

1. C
2. A
3. C
4. D
5. F
6. D
7. C
8. **B**
9. **E**
10. E
11. A
12. C
13. D
14. B
15. A
16. F
17. E
18. D
19. F
20. B
21. F
22. D
23. C
24. B
25. F
26. D
27. E
28. C
29. A
30. C
31. B
32. D
33. A
34. A
35. F
36. C

37.) B